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Cleaning utensil

5 The invention relates to a cleaning utensil, comprising a body made of a first synthetic material in which at least one fastening element made of a second synthetic material is provided, the second synthetic material being more elastic than the first synthetic material and on the other hand a method for manufacturing such a utensil.

10 The cleaning utensil is more particularly a device for cleaning flat surfaces, for cleaning floors by means of small pieces of cloth, for instance.

15 Such devices which make use of small pieces of cloth for single or multiple use are already known and are composed of several parts.

20 The known devices consist of a base plate, small inserts, a lower surface, a hinge part, an elongation and a threaded part. The base plate consisting of thermoplastic material or metal is usually manufactured by means of injection moulding. On this base plate two, usually four inserts made of an elastomer are applied. The inserts are provided with a small clip intended for fastening a small piece of cloth.

25 The lower surface is made of an elastomer, polyurethane or some other synthetic material.

30 In the centre of the base plate, the base plate is also provided with a thermoplastic hinge part, enabling the handle to perform a rotating movement of 360° with respect to the base plate. The hinge part is connected to the base plate by means of the elongation. The hinge part is likewise provided with a threaded part to fasten the handle to the hinge part.

This known device has the great disadvantage that the various parts have to be manufactured separately from one another in separate manufacturing operations. Therefore, the whole unit has to be assembled still, manually most of the time, requiring a lot of time and money. The disadvantage of this system is, that the separate parts making up a whole might have a tendency to come loose.

10 The purpose of the invention is to produce a cleaning utensil which no longer has the drawbacks mentioned above.

The purpose of the invention is achieved by providing a cleaning utensil comprising a body made of a first synthetic material in which at least one fastening element is provided made of a second synthetic material, the second synthetic material being more elastic than the first synthetic material, the said utensil being made of one piece in one injection operation.

20 By manufacturing the utensil in one injection operation, it is possible to manufacture the device with a minimum of labour costs. As the utensil consists of only one piece, the danger of certain parts coming loose is avoided.

25 In a preferred embodiment of the cleaning utensil according to the invention, the said first synthetic material is a thermoplastic and the second synthetic material is an elastomer. Preferably, the synthetic materials used are polypropylene, polyamide, acrylic nitrile butadiene (ABS), polyethylene terephthalate (PET), polyvinyl chloride (PVC), natural rubber, thermoplastic elastomers.

30 As it is a cleaning utensil in one piece, without loose

components and because of the elastomers and thermoplastics used, it will be possible for the user to clean this utensil in a dishwashing machine.

5 In a more particular embodiment of the cleaning utensil according to the invention, the body comprises at least one fastening element for a cloth. Preferably, the body is provided with two, three or four fastening elements for a cloth. In another preferred embodiment the body likewise
10 comprises a handle fastening element, onto which a handle may be snap-fitted by means of a snap-fitting system, possibly, the handle may also be fastened by means of a screw thread system.

15 In a particularly advantageous embodiment of the cleaning utensil according to the invention, the body comprises a shell-shaped envelope, being provided with a hollow inner space and an open lower surface, ribs being provided in the inner space which extend over the entire depth of the inner
20 space. Preferably, the ribs are made of an elastomer, but they may also be made of polyurethane or another expanded synthetic material. The upright ribs form, as it were, the lower surface of the sole of the cleaning device. Cleaning devices provided with such ribs have the advantage that a
25 greater cleaning effect is obtained, because dust may accumulate between the ribs. Preferably, the ribs are made such that the lower surface is slightly curved.

In a most particular preferred embodiment of the cleaning
30 utensil according to the invention, the handle fastening element comprises a handle holder, a zone, made of the second synthetic material being provided between the handle holder and the envelope. Preferably, this zone is a funnel-shaped membrane of elastomer enabling the handle to rotate

through 360° on the one hand, and bringing the handle parallel to the ground surface, the sole of the device remaining in touch with the ground surface. This zone or membrane replaces the elongation and the hinge part at present known and used in the trade. Preferably, the membrane is injected to form one piece with the shell-shaped envelope and the handle holder.

Another object of the present invention is a method for manufacturing a cleaning utensil by which a cleaning utensil is manufactured, according to any one of the claims 1 up to and including 7, in one piece and in one injection operation. Preferably, the cleaning utensil according to the invention is manufactured by means of an injection mould and an injection moulding machine for synthetic material suitable for the purpose.

Preferably, first the thermoplastics are injected and then the elastomers are injected into the same injection mould, because of which the elastomers, as it were, are intimately united with the thermoplastics.

In order to further explain the qualities of this invention and to indicate its additional advantages and particulars, a more detailed description of the cleaning utensil and the method by which it is manufactured will now follow. It will be obvious that nothing in the following description may be interpreted as being a restriction of the protection of this invention demanded for in the claims.

In this description, by means of reference numbers, reference is made to the attached drawings in which:

- Figure 1 is a perspective representation of a cleaning utensil according to the present invention;

- Figure 2 is a top view of the cleaning utensil;
 - Figure 3 is a bottom view of the cleaning utensil;
 - Figure 4 is a view according to the line A-A;
 - Figure 5 is a view according to the line B-B;
 - 5 - Figure 6 is a perspective representation of the top of the cleaning utensil;
 - Figure 7 is a perspective representation of the bottom side of the cleaning utensil.
- 10 The cleaning utensil (1) according to the invention, as represented in the figures, comprises a body made of two kinds of synthetic material, the one synthetic material, for instance a rubber, being more elastic then the other synthetic material, for instance a polypropylene.
- 15 The cleaning utensil is composed of a shell-shaped envelope (6) which is provided with a hollow inner space (7) and an open lower surface, ribs (8) being provided in the inner space (7), which extend over the entire depth of the inner
- 20 space (7). The upright ribs form, as it were, the lower surface of the sole of the cleaning device.
- A the top of the shell-shaped envelope (6) four fastening elements for small pieces of cloth (2) are provided, these
- 25 fastening elements (2) are made of an elastomer and are provided with indentations (9). The small piece of cloth is attached by pressing the small piece of cloth into the indentations of the fastening element (2) with the finger.
- 30 In the centre of the shell-shaped envelope (6), at the top, a handle fastening element (3) is provided, consisting of a handle holder (4) and a zone (5) made of an elastomer. This zone (5) is provided between the handle holder (4) and the envelope (6). As represented in figure 4, the zone (5) is a

funnel-shaped membrane made of an elastomer. This enables the handle, which may be snap-fitted onto the handle holder (4) by means of a snap-fitting system, to be brought into a position, parallel to the ground surface, while the sole of the device (1) remains in touch with the ground surface. The membrane is injected integral with the envelope (6) and the handle holder (4). Membrane, envelope and handle holder thus making a whole. Preferably, the handle holder is made of a thermoplastic.

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The cleaning utensil (1) is realized in one piece in one injection operation by means of a two-component injection moulding process. The said utensil (1) is realized by means of an injection mould and an injection moulding machine for synthetic material suitable for the purpose, enabling the envelope (6), the upright ribs (8), the fastening element for the small pieces of cloth (2), the membrane (5) and the handle holder (4) to be injected entirely together to form one solid piece. Preferably, this is done by first injecting the thermoplastic and to let the elastomers intimately unite with the thermoplastics in the same injection mould. This method enables the cleaning utensil to be manufactured in one piece and in one injection operation.

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Finally it should be mentioned that the cleaning utensil is more particularly a cleaning device for flat surfaces, for instance, for cleaning floors by means of small pieces of cloth.